

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,010,483 B2  
APPLICATION NO. : 09/866854  
DATED : March 7, 2006  
INVENTOR(S) : Jebu Jacob Rajan

Page 1 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**ON TITLE PAGE, ITEM (56) OTHER PUBLICATIONS**

After "Quatieri et al.,": "Proceeed-" should read --Proceed--; and  
Page 2, After, "Query expansion": "Appliations" should read --Applications--.

**ON TITLE PAGE, ITEM (56) U.S. PATENT DOCUMENTS**

Page 2, "Vähäalto" should read --Vähäalto et al.--; and  
Page 2, After "Bayesian Separation": "Autoregssive" should read --Autoregressive--.

**COLUMN 1**

Line 14, "example," should read --for example,--.

**COLUMN 4**

Line 8, "with out of" should read --without--.

**COLUMN 5**

Line 51, "step sill" should read --step s111--; and  
Line 56, "step sill" should read --step s111--.

**COLUMN 7**

Line 58, " $s(n) = a_1s(n-1) + a_2s(n-2) + \dots + a_ks(n-k) + e(n)$ "

$s(n-1) = a_1s(n-2) + a_2s(n-3) + \dots + a_ks(n-k-1) + e(n-1)$

$s(n-N+1) = a_1s(n-N) + a_2s(n-N-1) + \dots + a_ks(n-k-N+1) + e(n-N+1)$  (3)"  
should read

-- " $s(n) = a_1s(n-1) + a_2s(n-2) + \dots + a_ks(n-k) + e(n)$ "  
 $s(n-1) = a_1s(n-2) + a_2s(n-3) + \dots + a_ks(n-k-1) + e(n-1)$   
.....

$s(n-N+1) = a_1s(n-N) + a_2s(n-N-1) + \dots + a_ks(n-k-N+1) + e(n-N+1)$

(3) --.

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COLUMN 8

Lines 29-34, “ $e(n) = s(n) - a_1s(n-1) - a_2s(n-2) - \dots - a_ks(n-k)$

$$e(n-1) = s(n-1) - a_1s(n-2) - a_2s(n-3) - \dots - a_ks(n-k-1)$$

$$\begin{aligned} e(n-N+1) &= s(n-N+1) = a_1s(n-N) - a_2s(n-N-1) - \dots \\ &\quad - a_ks(n-k-N+1) \end{aligned} \quad (5)''$$

should read

$$-e(n) = s(n) - a_1s(n-1) - a_2s(n-2) - \dots - a_ks(n-k)$$

$$e(n-1) = s(n-1) - a_1s(n-2) - a_2s(n-3) - \dots - a_ks(n-k-1)$$

..

(5)--; and

$$\begin{aligned} e(n-N+1) &= s(n-N+1) = a_1s(n-N) - a_2s(n-N-1) - \dots \\ &\quad - a_ks(n-k-N+1) \end{aligned}$$

Lines 57-62, “ $g(n) = h_1s(n-1) + h_2s(n-2) + \dots + h_r s(n-r) + \epsilon(n)$

$$g(n-1) = h_1s(n-2) + h_2s(n-3) + \dots + h_r s(n-r-1) + \epsilon(n-1)$$

$$\begin{aligned} q(n-N+1) &= h_1s(n-N) + h_2s(n-N-1) + \dots + h_r s(n-r-N+ \\ &\quad 1) + \epsilon(n-N+1) \end{aligned} \quad (7)''$$

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should read

$$-\underline{g}(n) = h_1s(n-1) + h_2s(n-2) + \dots + h_r s(n-r) + \epsilon(n)$$

$$g(n-1) = h_1s(n-2) + h_2s(n-3) + \dots + h_r s(n-r-1) + \epsilon(n-1)$$

..

$$q(n-N+1) = h_1s(n-N) + h_2s(n-N-1) + \dots + h_r s(n-r-N+1) + \epsilon(n-N+1)$$

(7) --.

COLUMN 9

$$\text{Lines. 47-49, " } \frac{p(\underline{y}(n)|\underline{s}(n), \underline{h}, r, \sigma_e^2) p(\underline{s}(n)|\underline{a}, k, \sigma_e^2) p(\underline{a}|\underline{k}) p(\underline{h}|r) p(\sigma_e^2) p(\sigma_e^2) p(k) p(r)}{p(\underline{y}(n))} \text{ "}$$

$$\text{should read -- } \frac{p(\underline{y}(n)|\underline{s}(n), \underline{h}, r, \sigma_e^2) p(\underline{s}(n)|\underline{a}, k, \sigma_e^2) p(\underline{a}|\underline{k}) p(\underline{h}|r) p(\sigma_e^2) p(\sigma_e^2) p(k) p(r)}{p(\underline{y}(n))} \text{ --.}$$

COLUMN 10

$$\text{Line 5, " } p(\underline{s}(n)|\underline{a}, k, \sigma_e^2) = p(\underline{e}(n)) \left| \frac{\delta \underline{e}(n)}{\delta \underline{s}(n)} \right|_{\underline{e}(n)=\underline{s}(n)-S\underline{a}} \text{ " should read (11)}$$

$$\text{-- } p(\underline{s}(n)|\underline{a}, k, \sigma_e^2) = p(\underline{e}(n)) \left| \frac{\delta \underline{e}(n)}{\delta \underline{s}(n)} \right|_{\underline{e}(n)} = \underline{s}(n) - S\underline{a} \quad (11) \text{ --; and}$$

$$\text{Line 55, " } p(\underline{y}(n)|\underline{s}(n), \underline{h}, r, \sigma_e^2) = p(\underline{e}(n)) \left| \frac{\delta \underline{e}(n)}{\delta \underline{y}(n)} \right|_{\underline{e}(n)=\underline{q}(n)-Y\underline{h}} \text{ " should read (14)}$$

$$\text{-- } p(\underline{y}(n)|\underline{s}(n), \underline{h}, r, \sigma_e^2) = p(\underline{e}(n)) \left| \frac{\delta \underline{e}(n)}{\delta \underline{y}(n)} \right|_{\underline{e}(n)} = \underline{q}(n) - Y\underline{h} \quad (14) \text{ --.}$$

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COLUMN 13

Lines 38-44, “  $p(\underline{a}, k | \underline{h}^0, r^0, \sigma_e^{2^0}, \sigma_e^{2^0}, \sigma_h^{2^0}, ) (\underline{s}(n))^0, \underline{y}(n)) \rightarrow \underline{a}^1, k^1$  ”  
 $p(\underline{h}, r | \underline{a}^1, k^1, \sigma_e^{2^0}, \sigma_e^{2^0}, \sigma_a^{2^0}, \sigma_h^{2^0}, \underline{s}(n)^0, \underline{y}(n)) \rightarrow \underline{h}^1, k^1$   
 $p(\sigma_e^2 | \underline{a}^1, k^1, h^1, r^1, \sigma_e^{2^0}, \sigma_a^{2^0}, \sigma_h^{2^0}, \underline{s}(n)^0, \underline{y}(n)) \rightarrow \underline{\sigma}_e^{2^1}$   
 $\vdots$   
 $p(\sigma_h^2 | \underline{a}^1, k^1, h^1, r^1, \sigma_e^{2^1}, \sigma_a^{2^1}, \sigma_h^{2^1}, \underline{s}(n)^0, \underline{y}(n)) \rightarrow \underline{\sigma}_h^{2^1}$

should read

$p(\underline{a}, k | \underline{h}^0, r^0, \sigma_e^{2^0}, \sigma_e^{2^0}, \sigma_a^{2^0}, \sigma_h^{2^0}, ) (\underline{s}(n))^0, \underline{y}(n)) \rightarrow \underline{a}^1, k^1$   
 $p(\underline{h}, r | \underline{a}^1, k^1, \sigma_e^{2^0}, \sigma_e^{2^0}, \sigma_a^{2^0}, \sigma_h^{2^0}, \underline{s}(n)^0, \underline{y}(n)) \rightarrow \underline{h}^1, k^1$   
 $-- p(\sigma_e^2 | \underline{a}^1, k^1, h^1, r^1, \sigma_e^{2^0}, \sigma_a^{2^0}, \sigma_h^{2^0}, \underline{s}(n)^0, \underline{y}(n)) \rightarrow \underline{\sigma}_e^{2^1} --$   
 $\vdots$   
 $p(\sigma_h^2 | \underline{a}^1, k^1, h^1, r^1, \sigma_e^{2^1}, \sigma_a^{2^1}, \sigma_h^{2^1}, \underline{s}(n)^0, \underline{y}(n)) \rightarrow \underline{\sigma}_h^{2^1}$

COLUMN 17

Line 20, “*a* vector.” should read -- *a* vector.--.

COLUMN 18

Line 4, “  $\hat{\underline{S}}(n) = \bar{A} \cdot \hat{\underline{s}}(n-1) + \hat{\underline{e}}(n)$  ” should read  
 $-- \hat{\underline{s}}(n) = \bar{A} \cdot \hat{\underline{s}}(n-1) + \hat{\underline{e}}(n) --$ .

COLUMN 19

Line 37, “  $\tilde{e}(t) = \sigma_e^2 \underline{r}(t) + \underline{\theta}(t)$  where  
 $\tilde{e}(t) = [\tilde{e}(t) \tilde{e}(t-1) \tilde{e}(t-2) \dots \tilde{e}(t-r+1)]^T$  ” should read  
 $-- \tilde{e}(t) = \sigma_e^2 \underline{r}(t) + \underline{\eta}(t)$  where  
 $\tilde{e}(t) = [\tilde{e}(t) \tilde{e}(t-1) \tilde{e}(t-2) \dots \tilde{e}(t-r+1)]^T --$ .

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**COLUMN 20**

Line 14, "above described" should read --above-described--;  
Line 44, "above" should read --above- --; and  
Line 53, "above described" should read --above-described--.

**COLUMN 22**

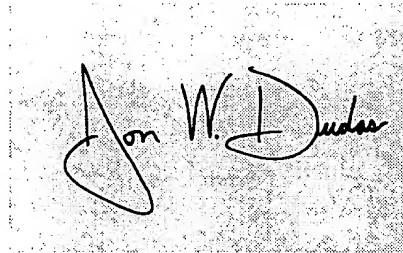
Line 25, "value which was" should read --values which were--.

**COLUMN 29**

Line 20, "comprising" should read --comprising: ¶--.

Signed and Sealed this

Thirteenth Day of February, 2007



JON W. DUDAS  
*Director of the United States Patent and Trademark Office*